

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	PHILOSOPHY	3
	Individual Well-being	3
	Research Quality	3
	Scientific Partnerships	3
	Support for Project Scientists	4
	Outreach and Education	4
	Human Resources	4
	Opportunities for the Commercial Sector	4
3.	STAFF, ORGANIZATION, AND FACILITIES	5
	Staff	5
	Organization	5
	Facilities	7
4.	OUR WORK AND ITS PLACE IN NASA'S MISSION	9
	NASA's Enterprises	9
	Earth Science	9
	Space Science	10
5.	MAJOR ACTIVITIES	13
	Measurements	13
	<i>Spacecraft-Based Instruments (launch dates are in parentheses)</i>	15
	<i>Aircraft-Based Instruments</i>	16
	<i>Ground-Based and Laboratory Instruments</i>	17
	<i>Field Campaigns</i>	19
	Data Sets	20
	<i>Televised Infrared Operational Satellite (TIROS) Operational Vertical Sounder Pathfinder</i>	20
	<i>Tropospheric Ozone Data</i>	21
	<i>Aerosol Products from the Total Ozone Mapping Spectrometer</i>	21
	<i>Multiyear Global Surface Wind Velocity Data Set</i>	22
	<i>Global Precipitation Data Set</i>	22
	Data Analysis	22
	<i>Atmospheric Ozone Research</i>	22
	<i>Data Assimilation</i>	24
	<i>Seasonal-to-Interannual Variability and Prediction</i>	24
	<i>Rain Measurements</i>	25
	<i>Aerosols/Cloud Climate Interactions</i>	26
	<i>Hydrologic Processes and Radiation Studies</i>	26
	<i>Earth Observing System Interdisciplinary Investigations</i>	27
	<i>Effects of Aircraft on the Atmosphere</i>	28

TABLE OF CONTENTS

Modeling	28
<i>Coupled Atmosphere-Ocean-Land Models</i>	28
<i>Global Modeling and Data Assimilation</i>	29
<i>Cloud and Mesoscale Modeling</i>	30
<i>Physical Parameterization in Atmospheric GCM</i>	30
<i>Trace Gas Modeling</i>	31
Support for National Oceanic and Atmospheric Administration Operational Satellites	31
<i>Geostationary Operational Environmental Satellites</i>	32
<i>Polar Orbiting Environmental Satellites</i>	32
<i>Solar Backscatter Ultraviolet</i>	32
<i>National Polar Orbiting Environmental Satellite System</i>	33
Project Scientists	34
Interactions with Other Scientific Groups	35
<i>Interactions with the Academic Community</i>	35
<i>Interactions with Other NASA Centers and Federal Laboratories</i>	36
<i>Interactions with Foreign Agencies</i>	37
Commercialization and Technology Transfer	37
6. HIGHLIGHTS OF LABORATORY FOR ATMOSPHERES ACTIVITIES IN 1999	39
Measurements	39
<i>Ground-Based Measurements</i>	39
<i>Field Campaigns</i>	42
Data Analysis	46
<i>Ozone and Trace Gases</i>	46
<i>Aerosol Studies</i>	51
<i>Clouds and Precipitation</i>	55
<i>Climate Variability and Climate Change</i>	60
Modeling	62
<i>Data Assimilation</i>	62
<i>Hurricanes</i>	69
<i>Physical Processes</i>	73
<i>Planetary Sciences</i>	75
7. EDUCATION AND PUBLIC OUTREACH	77
Interaction with Howard University and Other Historically Black Colleges and Universities	77
Graduate Student Summer Program	78
K-12 Education	78
University Education	79
Monsoon 2 CD-ROM and Other Educational Tools	80
Public Outreach	81
GOES Server	82
Terra Outreach Synopsis	82

TABLE OF CONTENTS

NASA/NOAA: Earth Science Electronic Theater 2000	83
HDTV: Video Server: "Turn Key" HDTV	84
Museum Support	84
Global Learning and Observations to Benefit the Environment (GLOBE)	85
NASA/NBC-4 (WRC-TV) ESIP-3 Cooperative Agreement	85
Digital Library	86
8. ACKNOWLEDGMENTS	87
APPENDIX 1. 1999 SHORT-TERM VISITORS	89
APPENDIX 2. 1999 COMPOSITION OF THE VISITING COMMITTEES FOR THE LABORATORY	97
APPENDIX 3. 1999 VISITING SCIENTISTS AND ASSOCIATES OF JOINT CENTERS	99
APPENDIX 4. 1999 SEMINARS	101
APPENDIX 5. 1999 SCIENCE TEAM MEETINGS AND WORKSHOPS	107
APPENDIX 6. 1999 NASA TECHNICAL MEMORANDA AND OTHER PUBLICATIONS	111
APPENDIX 7. 1999 REFEREEED PUBLICATIONS	113
APPENDIX 8. ACRONYMS	125